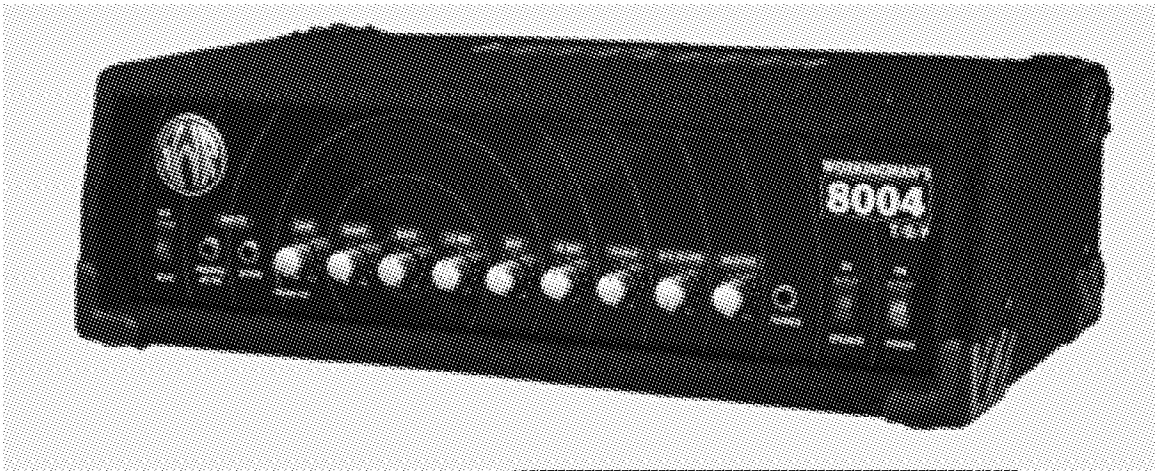
Workingman's 8004

T/O/P

OWNER'S MANUAL



SWR SOUND CORP. • SUN VALLEY, CA • USA

IMPORTANT SAFETY INSTRUCTIONS

CAUTION: TO REDUCE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER OR BACK.
NO USER-SERVICEABLE PARTS INSIDE. PLEASE REFER TO A QUALIFIED SERVICE TECHNICIAN.

A. Read Instructions: *All safety and operation instructions should be read before the product is operated.*

B. Retain Instructions: *The safety and operating instructions should be retained for future reference.*

C. Heed Warnings: *All of the warnings on this product and in the operating instructions should be adhered to.*

D. Follow Instructions: *All operating and use instructions should be followed.*

E. Cleaning: *Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a slightly damp cloth for cleaning.*

F. Water and Moisture: *Do not use this product near water; for example, near a swimming pool, wet basement, and the like.*

G. Accessories: *Do not place this product on an unstable cart, stand, tripod, bracket or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product.*

H. Ventilation: *Slots and openings in the unit are provided for ventilation and to ensure reliable operation of the product, to protect it from overheating, thus these openings must not be blocked or covered. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.*

I. Grounding: *This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.*

J. Power Cord Protection: *Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon them, paying particular attention to cords at plugs and the point where they exit the product.*

K. Lightning: *For added protection of this product during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.*

L. Overloading: *Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.*

M. Object and Liquid Entry: *Never push objects of any kind into this product through the openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.*

N. Servicing: *Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.*

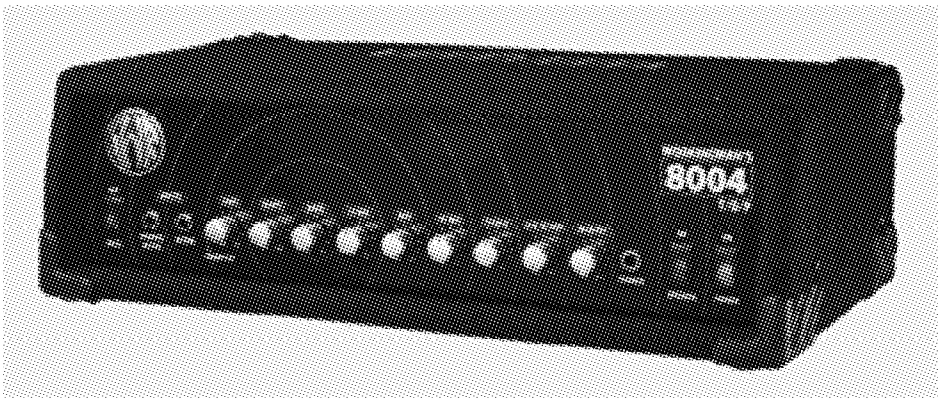
O. Damage Requiring Service: *Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:*

1) When the power supply cord has been damaged
2) If liquid has been spilled or objects have fallen into the product
3) If the product has been exposed to rain, water, or other conductive liquids
4) If the product does not operate normally by following the operating instructions
5) If the product has been dropped or damaged in any way
6) When the product exhibits a distinct change in performance.

P. Replacement Parts: *When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.*

Q. Safety Check: *Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.*

R. Heat: *The product should be situated away from heat sources such as radiators, heat registers, stoves or other products that produce heat.*



INTRODUCTION

Congratulations on your purchase of the SWR Workingman's 8004 T/O/P Bass Amplifier! You now own the top-of-the-line amp in SWR's Workingman's Series of products for bassists who expect professional tone and power at a price they can afford.

The story of the development of this particular amplifier is unique. Often in the past when creating new models from the ground up, SWR has consulted with a wide variety of professional players, many of whom have differing opinions but all of whom are considered experts in the field of bass tone. This amplifier was done a little differently, as it was created by SWR's engineering team (led by company founder Steve W. Rabe) and guided by extensive consultation with one of the most important bassists of our time: Tower Of Power's Francis "Rocco" Prestia.

The goals were clear from the outset: simple, loud, fast response, all solid-state, and easy to use. We saw early on that it would be a perfect addition to our Workingman's Line, which we launched in the mid-'90s in response to numerous requests from our customers to produce a line of products that would incorporate the same great SWR sound, high reliability, and hand-made craftsmanship, at an overall lower price than the Professional Line. Regardless of price, the Workingman's Series offered no compromises of the essential SWR design and construction philosophy. Corners weren't cut from a more elaborate model: rather, each product's design parameters were conceived from the ground up and the best available components were selected for each application. As a result, it became and continues to be our highest-selling line of products.

But working with Rocco gave us a chance to explore some different tone circuits and voicings in the preamp and EQ controls, and after six months of intensive development and several prototypes, the Workingman's 8004 T/O/P—that's Tower Of Power—was born. While staying true to the basic elements of tone that have made SWR famous, it literally sounds different than anything else we offer. The midrange is less present, the bass response is more "pillowy," and the solid-state circuitry is lightning-quick to the touch of your fingers. With a brutish 750-watt mono-block power amp, a custom-made rack case for easy housing and transportation, a wide variety of audio and speaker outputs, and circuits like the brand new "Shape" control, we're proud to say that it's the new top-of-the-line piece in the Workingman's line. Along with the perfectly-matched Workingman's Tower 8x10 speaker cabinet, you've got a rig that can do the job anywhere—as Rocco has been demonstrating on stages around the world.

Please take the time to read your User Guide thoroughly and completely, so that you can realize the full potential of your new Workingman's 8004 T/O/P Bass Amplifier. Everyone at SWR thanks you for your purchase, and for believing in our continued efforts to bring the best possible products to bassists of all levels. Including Rocco's level.

Sincerely,

SWR Sound Corporation

Note: *Please take a moment to verify that the following items were included in your Workingman's 8004 packaging: AC Cable, SWR Catalog.*

WORKINGMAN'S 8004 T/O/P FRONT PANEL FEATURES

- Steel chassis enclosed in custom carpeted rack case (with stack-lock corners and side strap handle)
- Discrete solid-state front end
- XLR Mute Switch
- Hi and Low Sensitivity 1/4" Inputs
- Gain control with LED peak clipping indicator
- Shape control
- Bass control
- Lo-Mid control
- Mid control
- Hi-Mid control
- Treble control
- Effects Blend control
- Master Volume control
- Stereo Headphones Jack
- Speaker On/Off switch
- Illuminated Neon Power On/Off switch

WORKINGMAN'S 8004 T/O/P REAR PANEL FEATURES

- Balanced (XLR) Output jack
- Ground Lift Switch for XLR Output jack
- Line/Direct Switch for XLR Output jack
- Tuner Out jack
- Side-Chain Effects Loop (Effects Send and Effects Return 1/4" jacks)
- Unbalanced Line Out jack (pre-master)
- Preamp Out jack (post-master)
- Power Amp In jack
- Cooling Fan On/Off switch
- Two 1/4" Speaker Output jacks
- Two Speakon Output jacks
- Speaker Fuse (10 Amp Fast-Blo)
- Line Fuse (10 Amp Slo-Blo)
- A/C Receptacle

ELECTRICAL SPECIFICATIONS

Note: *All measurements were taken with a line voltage of 120VAC. All voltages and watts are "RMS." All measurements are taken with tone controls set flat, Shape control at minimum.*

Power Ratings (minimum):

850 Watts @ 2.6 ohms

750 Watts @ 4 ohms

450 Watts @ 8 ohms

(minimum load = 2.6 ohms)

Power Bandwidth (frequency response):

(@ 850 watts RMS) -3dB @ 20 Hz and 40 kHz

Dimensions: 23 1/4" W x 7 1/2" H x 13 1/2" D

Weight: 37 lbs.

WORKINGMAN'S 8004 T/O/P – GETTING STARTED

Connecting Your Speaker Cabinets

The Workingman's 8004 is a mono amplifier, which makes things fairly simple. Locate the "Speaker Outputs" section on the rear of the amp. You will notice that there are four different speaker output jacks: two 1/4" type and two Speakon type jacks. The Speakon jacks are preferable if your speaker cabinet is equipped with Speakons as well; however, you can use any of the four available jacks to connect your speaker(s) to the Workingman's 8004.

Using One Speaker Cabinet

Using a speaker cable of 18 gauge or heavier (the heavier the cable, the lower the gauge), simply connect any one of the Workingman's 8004's Speaker Output jacks to the input jacks of your speaker cabinet. If your cabinet is a 4 ohm enclosure, the Workingman's 8004 will deliver 750 watts into it. If your cabinet is an 8 ohm enclosure, it will deliver 450 watts into it. This is a loud amplifier. Be sure to check the power handling capabilities of your speaker cabinet before connection and operation.

Using Two Speaker Cabinets

Using a speaker cable of 18 gauge or heavier (the heavier the cable, the lower the gauge), simply connect any of the Workingman's 8004's Speaker Output jacks to the input jacks of your two speaker cabinets. (You can use one 1/4" and one Speakon Output jack each if you wish; however, it is always best to use speaker cables with similar type ends.) If the cabinets are the same impedance, the same amount of power will be sent to each enclosure. If the cabinets are different impedances, more power will flow to the cabinet with the lower impedance. Since the Workingman's 8004 is a mono amplifier and individual cabinet levels cannot be adjusted, it is recommended that you use cabinets of the same impedance when using more than one cabinet. If you use two 8 ohm cabinets—the two-cabinet setup recommended by SWR—the resulting "total" impedance will be 4 ohms, and the Workingman's 8004 will deliver 750 watts spread across both cabinets. Needless to say, in all cases, be sure to check the power handling capabilities and impedance of your speaker cabinet(s) before connection and operation.

Note: *The minimum total impedance when operating the Workingman's 8004 is 2.6 ohms. This means you can safely use:*

1) A single 8 ohm cabinet

2) A single 4 ohm cabinet

3) Two 8 ohm cabinets (total: 4 ohms)

*4) One 8 ohm cabinet and one 4 ohm cabinet (total: 2.6 ohms) ***

*5) Three 8 ohm cabinets (total: 2.6 ohms) ***

***Running the amplifier constantly at 2.6 ohms, while technically acceptable, will cause the amp to run hotter than usual, and will cause heat-related wear on components sooner than normal.*

More details are available in the "Speaker Outputs" section of this guide, and we strongly recommend that you read the entire guide. However, this should be enough information to get you started.

Turning The Unit On

Remove the AC cable from the accessory pack and connect it from the amplifier to a standard wall outlet. Make sure that the both the Gain and Master Volume controls are set to the minimum position. Locate the power switch on the right side of the front panel and turn the amplifier on. The power switch should then illuminate in red. Upon powering up, if the Speaker On/Off switch is set to the "On" position, don't be surprised if you hear a small pop. This is absolutely normal. (Eliminating this "power on transient" would require a component called a relay. SWR chose not to incorporate this type of component due to the fact that relays degrade signal quality and often fail, causing the unit to have no output and requiring a trip to a local service center. It can be eliminated by setting the Speaker On/Off switch to the "Off" position upon powering up, after which point you can set the switch to "On" for operation.)

Getting Sound Out Of The Workingman's 8004

Make sure that the Speaker On/Off switch is set to the "On" position. Plug your instrument into the desired input jack (please refer to "Front Panel Features" for more detail). Turn your instrument's volume up to at least 75% of maximum and slowly adjust up the Gain control to the halfway point. Now turn up the Master Volume control to an equal level or less (given that the amp can deliver such a large amount of power, it would be wise to adjust the Master Volume control up slowly). You should now hear the sound of your instrument amplified through the Workingman's 8004 into your speaker cabinet(s).

FRONT PANEL FEATURES

XLR Mute Switch

This switch can be used to defeat the signal present at the Balanced (XLR) Output jack on the rear panel. When set to the up ("XLR") position, the signal will be present as normal. When set to the down ("MUTE") position, the signal will be defeated. This way you can choose to tune between songs during live performances without the house P.A. amplifying your harmonics, and you still have the option of hearing your signal onstage in your rig depending on the setting of the Speaker On/Off switch (located on the right side of the front panel). The XLR Mute is also useful for preventing the "pop" sound that sometimes occurs when you plug or unplug your bass—especially if the front-of-house or studio engineer has forgotten to bring the faders down on the mixing board (which, as we all know, happens on occasion).

Input Jacks

Both input jacks accept a standard 1/4" phone plug and both inputs can be used at the same time. Since the two inputs are totally independent, no loss in volume or tone will occur by using two instruments simultaneously. However, the main applicational use for the two separate input jacks is their difference in level, as the Passive/Active input has over twice the gain of the Active input. In other words, it's not necessarily intended as a "submixer" for two instruments, but no harm will come from having two instruments plugged in at once. Please read below for more details.

Passive/Active Input Jack

This input jack is designed to accommodate both "passive" instruments and most "active" instruments. A passive instrument has no built-in preamp and does not use a battery, while an active bass utilizes a battery-operated preamp for gain, tone controls, or both. The Passive/Active Input will work with all instruments having a maximum output of less than 1 volt RMS. Some active pickups such as EMG, Bartolini, etc., use batteries for operation and will work perfectly using this input. Instruments made by MTD, Sadowsky, Modulus, etc., have active electronics that are suited for use in the Passive/Active input.

Generally speaking, try this input first. If you hear a small amount of distortion and the Preamp Clip LED is not activated, try using the Active input jack. If the Active input does not correct any audible distortion, check the battery in your bass.

Active Input Jack

The Active input jack should be used with instruments having a built-in (on board) preamp or other sound sources that will produce output levels greater than 1 volt RMS. The number of bass manufacturers has increased significantly over the years, and it's impossible to try and keep track of them all. Generally, if you have very "hot" pickups and/or tone controls installed in your instrument, and you use them to boost the level of your bass signal 10 dB or more, you may find the Active input more compatible. The best judge is your own ears.

If you're using a keyboard or bass pedal with the Workingman's 8004, we have found the best choice to be the Active input.

Note: *Using the Active input with passive basses (active instruments will always employ a battery) may result in a loss of high end transients. Players who roll off their high end starting at about 2kHz, or prefer a "darker" sound, may find this input more to their liking.*

If you hear some distortion with your active bass and are using the Active Input, make sure the preamp clip LED indicator is not lighting. If the preamp stage is not being driven into clipping, replace the battery in your instrument.

Gain Control

The Gain control adjusts the volume of the preamp section. Since the Gain control is similar to a "pad," a small amount of signal will be heard even with the Gain control rotated fully counter-clockwise if the Master Volume is up.

To ensure maximum signal-to-noise ratio and still prevent unwanted clipping of the preamp section, first set the EQ and Shape controls to your liking. Then set the Gain control by raising it slowly until the Preamp Clip LED barely flashes when your loudest note is struck. However, it is not essential to set the Gain control in this manner; having it set well below the point of clipping is also fine. (With some passive basses and in conjunction with little or no EQ boost from your amplifier, the preamp clip light may not illuminate – even with the Gain control set to maximum. This is normal.)

Note: *The Gain can serve as an EFFECTS SEND LEVEL ADJUSTMENT. If your effect is being overdriven, turn down the Gain control and readjust your Master volume for overall loudness.*

Preamp Clip LED

The Preamp Clip LED will light whenever the preamp, tone section or output buffer reach clipping (run out of headroom). In the event the Preamp Clip LED lights, turn down the Gain control. Since this circuit monitors the tone controls, boosting any one of them can cause the Preamp Clip LED to activate. Once again, you may leave the tone control at its desired level, but turn the Gain control down further.

Note: *Even though the Preamp Clip LED lighting indicates that at some point the preamp is clipping, no harm is being done to your amplifier. However, clipping of the power amp can cause damage to your speakers and is not recommended.*

Shape Control

The Shape Control in the Workingman's 8004 is based on SWR's trademark Aural Enhancer circuit. That feature was originally developed to bring out the fundamental low notes of the bass guitar, enhance the high end transients, and reduce certain frequencies that help "mask" the fundamentals. The Shape Control accomplishes this as well, but with some noticeable differences.

First, let's take a second to learn how the Shape control works. Think of it as a variable tone curve that changes depending on where you set the Shape control knob. As you raise the control clockwise from the "MIN" position , you are elevating a whole range of sound (lows, mids, and highs) at a variety of frequency points selected specifically because they're different than those selected for the individual Tone Controls.

This remains true up to about the "2 o'clock" position (a popular setting for many), at which point select-

ed mids start to drop off—specifically, a group of frequencies centered around 800 Hz. At this point and after, the effect becomes much more pronounced. However, the curves involved here are gentle, as opposed to the very extreme curves you can create by boosting or cutting the Active Tone Controls (EQ). Most significantly for basses, the Shape control will help bring out the fundamentals of your lower registers without masking them with overtones, as is possible when using the Bass control only. At the same time, it opens up the sibilance characteristics of all instruments without being harsh.

For those familiar with SWR units—or, if you're just curious—differences between the Shape circuit in your Workingman's 8004 and the Aural Enhancer circuit in most other SWR units are as follows:

1. On the Aural Enhancer, the "selected mids" that drop off after the 2 o'clock position on the knob are centered around 200 Hz, as opposed to 800 Hz in the Shape circuit.
2. When the Shape control is set to the "MIN" position (fully counter-clockwise), it is literally out of the signal chain entirely. (You actually "blend in" the Shape's circuitry as you turn the knob clock wise.) The Aural Enhancer, on the other hand, is always in the signal path to a degree, even when the control is set to "MIN".
3. When set to "MAX" (fully clockwise), the effect of the Shape control is more drastic than the Aural Enhancer set at maximum.

Obviously, numbers and curves and circuits all mean nothing compared to what you hear with your own ears. Play a chord, a repeated lick, or a harmonic, and turn the Shape control to hear the effect for yourself. As always, your ears are the best judge when it comes to settings that affect the tone of your instrument.

Active Tone Control Section

All of the controls in the Active Tone Control (or EQ) section of your Workingman's 8004 are capable of cutting or boosting the desired frequencies up to 15 dB in either direction. Starting at the mid-position ("center-click") of each control, turning the knob counter-clockwise cuts the level of that control, while turning the knob clockwise boosts it. All five are shelving-type tone controls, and the shelving point—or "center frequency"—for each control is as follows:

Bass: 80 Hz

Lo Mid: 200 Hz

Mid: 800 Hz

Hi Mid: 2 kHz

Treble: 5 kHz

In plain terms, the Treble control is set at a higher frequency than on most bass amps, and can boost the "crystal" aspect of your sound without also boosting lower-treble frequencies that might seem "honky" to some. The Hi Mid and Mid controls are centered at more "present" frequencies, and while you may want to dial them out as you play by yourself, you may find that you want some of that "hair" on your note in a band setting to help cut through. The Bass and Lo Mid controls, used together, can add an extraordinary amount of "fatness" and low end to your signal, and should be adjusted slowly when boosting.

Different settings may be appropriate for different instruments, playing styles, performance venues, speaker cabinets... the variables are endless. By using your ears and taking some time to work with each of the five controls—plus the Shape control—you should be able to dial in just what you're looking for. Which isn't to say that your Workingman's 8004 won't sound good even if you leave all the tone controls flat. It will. These are just options to enhance the tone as you see fit.

Effects Blend Control

The Effects Blend control "blends" the signal sent from your instrument with the signal coming from your effects unit when used in the Effects Loop of the Workingman's 8004. With the Effects Blend fully counter-clockwise ("DRY"), no signal from your external effects unit will be heard. As you turn this control clockwise, more of the effect can be heard in the overall sound. When the Effects Blend control is set fully clockwise ("WET"), no true or unaffected signal is heard other than what your external effects unit provides. If your external effects unit has a similar control, adjust it to the fully clockwise ("Wet") position. This will avoid any possible phasing problems.

The Effects Blend circuit is similar to that used on recording consoles with the effects loop on a "side chain" to the normal circuit. Unless the control is set to the full wet position, you will always get the full sound of your instrument AND get the diversity an effects unit offers. This circuit is also effective in reducing noise generated by effects units because it is located after the gain stages in the preamp.

The Effects Blend control functions only when the Effects Loop is being used. It is activated when a 1/4" phone plug is inserted into the Effects Receive jack. (For more information, please see the heading titled "Effects Loop" in the "Rear Panel Features" section later in this guide.)

Master (Volume) Control

The Master (meaning "Master Volume") control adjusts the level being sent to the power amplifier in your Workingman's 8004—it controls the overall volume of the unit. Turning the control counter-clockwise reduces the overall level, while turning the control clockwise boosts the overall level.

Note: *In most cases, the Master control does not affect the level present at the various output jacks on the rear panel—it only affects the level being sent to the power amplifier, and subsequently, your speaker outputs only. There is one exception, however: the Preamp Out jack will be affected by the Master control. Also, losses caused by external effects units can be recovered by increasing the Master control.*

Speaker On/Off Switch

Setting the Speaker On/Off switch up to the "On" position allows the signal from the amplifier to be heard through any speaker enclosure(s) connected to the Speaker Output section of the Workingman's 8004. Setting the Speaker On/Off switch down to the "Off" position disables the speaker output section. This feature allows you to:

1. Use the Balanced (XLR) Output without using the internal speakers. This is especially useful in recording when you are "miking" the speakers and only a direct signal is required for the moment.
2. Tune up without making sound onstage (and interfering with other band members) while using the Tuner Out feature.
3. Defeat the "pop" you sometimes get when changing and/or unplugging instruments from the unit (especially if you sometimes forget to disconnect your instrument cable from the amplifier before disconnecting it from your bass, something that's always a good idea).
4. Defeat the "pop" present upon powering up the unit (though it causes no harm to the unit and/or your speakers).

Note: *If you do not hear any sound when you plug in and your system is properly connected, check the position of this switch!*

Power On/Off Switch

This switch turns the complete unit on or off. Setting the switch upwards to the "On" position turns on the unit, and the switch itself will illuminate in red. Setting the switch downwards to the "Power" position will turn the unit off, and the red light inside the power switch will turn off as well.

REAR PANEL FEATURES

Balanced (XLR) Output

The Balanced XLR out is a true electronically balanced output, suitable for studio and "front-of-house" (live) mixing consoles. The level present at this output has been set to a level optimal for most mixing board input applications. The signal appearing at the Balanced Output is governed by the setting of the push-button XLR Mode switch located below it (Line/Direct).

In the "Direct" position (button pushed out, the default setting from the factory), the Balanced Output signal comes from directly after the input buffer amp, giving you the sound of your instrument as purely and quietly as possible. In this position, no front panel controls are functional.

In the "Line" position, all front panel controls—including the Shape and EQ controls—are functional except the Master control, and the signal is essentially the same as that heard through your speaker system. If you are using an effects device in the effects loop, that signal will also be present when in the "Line"

position (dictated by the setting of the Effects Blend control on your Workingman's 8004). When in this position, the output level will be also affected by the Gain control on the front panel. It's worth noting that changing the level of the Gain control will affect the signal present at your speakers, the Effects Send jack, and the Balanced Output. For this reason, it's usually better to set your Gain control in accordance with the directions in the "Gain Control" previously listed in the "Front Panel Features" section of this guide, and to let the mixing engineer pad or boost the signal if necessary. However, you can adjust the Balanced Output level yourself with the Gain control if that option is not available for some reason.

Wiring for the XLR jack at the Balanced Output is as follows:

Pin 1 = ground, Pin 2 = + (plus), Pin 3 = – (minus) (American Standard)

Note: *Turn off transients appear at the Balanced Output when the amplifier is shut down. We recommend that equipment being used in conjunction with the Balanced Output be turned down, off, or disconnected BEFORE the Workingman's 8004 is turned off.*

XLR Mode Switch (Line/Direct)

This two-position push-button switch determines the signal present at the Balanced (XLR) Output jack as described in the section directly above. In simple terms:

1. "Direct" = pre-EQ
2. "Line" = post-EQ, pre-master

Pushing on the switch will change the mode of operation. When the switch is in the "out" position (default setting from the factory), the Balanced Output will be in "Direct" mode. When the switch is in the "in" position, the Balanced Output will be in "Line" mode.

XLR Ground/Lift Switch

Sometimes connecting to certain mixing boards or studio consoles with non-standard XLR wiring can cause a ground loop. Your Workingman's 8004 has a push-button switch for lifting the ground on the Balanced Output. (It affects no other outputs.) Pushing on the switch will change the mode of operation. When the switch is in the "out" position (default setting from the factory), ground is on Pin 1 of the Balanced Output jack as normal. When the switch is in the "in" position, the ground is lifted from Pin 1 of this output. If a persistent hum exists after trying both positions of the ground lift, there is probably:

1. A bad cable or connection somewhere between your Balanced Output jack and the snake leading to the mixing console
2. A dirty or miswired A/C socket
3. Mis-wired or poorly wired A/C in the building
4. Fluorescent lighting directly above you or in close proximity (especially when using single-coil pickups)
5. A cell phone in your right pocket that's interacting with the electronics in your bass (don't laugh, this actually happens!)

But, in the case of a true ground loop, this switch can often times solve the problem.

Tuner Out

The Tuner Out function allows the user to plug their instrument tuner into this jack and "tune up" without having to unplug and go back and forth from amp to tuner. In conjunction with either the XLR Mute switch and the Speaker On/Off switch, you can achieve silent tuning between songs onstage during a gig. To use this feature, connect a shielded patch cord from the Tuner Out jack on your Workingman's 8004 to the input jack on your tuner. Turn the amplifier on and you're ready to go.

Effects Loop

As mentioned previously in the "Effects Blend Control" section of the manual, the Effects Blend circuit in your Workingman's 8004 is similar to that used on recording consoles, with the effects loop on a "side chain" to the normal circuit. Unless the Effects Blend control is set to the full "wet" position, you will

always get the full sound of your instrument AND get the diversity an effects unit offers. Use of the effects loop will reduce the noise generated by external effects units (as compared to using the effect between your instrument and the input jack, though many people use it in this fashion anyway). This is because the loop is after the preamp gain stages.

The Effects Loop is compatible with most individual or multi-effect devices. Many effects devices on the market have input level adjustments. For instance, some units have a switch that you can set for either –20 dB or +4 dB. In all cases, these should be set for 0 dB (if available) or +4 dB. The level going to your effect is controlled by the Gain control on the front panel.

Note: *The Effects Loop is used in conjunction with the Effects Blend control on the front panel. When the Effects Blend control is in the full counter-clockwise ("Dry") position, no effects will be heard. This is normal.*

Connecting An Effects Device To The Workingman's 8004 Effects Loop

Obtain two high-quality shielded patch cables, preferably as short as possible. Route them in the most direct way possible. (Running patch cables over the top of the Workingman's 8004—as with any amplifier—can induce hum in the cables and is not recommended.) Take one cable and connect it from the Effects Send jack on the Workingman's 8004 to the input of your external effects device. Take the second cable and connect it from the output of your external effects device to the Effects Return jack on your Workingman's 8004. To set levels, follow the instructions as previously listed in the "Effects Blend Control" heading under "Front Panel Features."

Effects Send

This jack's primary function is to send a post-EQ, pre-master signal to an effects device for use in the Workingman's 8004 Effects Loop. However, it can also be used as:

1. A line level output for use in conjunction with an additional (slave) power amp—such as SWR's Power 750.
2. An unbalanced output suitable for recording or live mixing board purposes.

The output impedance of the Effects Send jack is 100 Ohms.

Effects Receive

This jack's primary function is to complete the Effects Loop circuit by routing the post-effects-device signal back into the power amp of the Workingman's 8004, where it can be blended back in with the original signal by using the Effects Blend control on the front panel. However, it can also be used as:

1. An additional power amp input jack. The Workingman's 8004 comes equipped with a Power Amp Input jack, but that input goes directly into the power amp at a preset level (as is typical in a "patch point" setup). If, for some reason, you wished to bypass the entire front end and use the Workingman's 8004 strictly as a power amp and still have the ability to use the Master Volume control, you could take the output of whatever line-level audio source you wished and connect it to this jack. Then, set the Effects Blend control to the full clockwise ("Wet") position. Use the Master control to set the overall level, and your Workingman's 8004 is now a power amp only.
2. An input for pre-recorded music, for playing along and practicing purposes. To accomplish this, insert a CD player or other sound source into the Effects Receive jack. (It must be a MONO 1/4" plug that goes into this input, so you'll have to use a stereo-to-mono cable adaptor of some kind.) You can adjust the level of recorded music versus the "live" sound of your instrument by using both the Effects Blend control (the more clockwise the control, the more pre-recorded music signal you'll hear) and the volume control of your CD (or other) audio source. The mixed sound will be heard through your speakers. Besides pre-recorded music, this is also an excellent way to practice along with a drum machine.

Input impedance of the Receive jack is 27k Ohms minimum.

Note: *Inserting a plug into the Effects Receive jack activates the Effects Blend control. The control receives this command through the ground created by the phone plug making contact with the jack. The plug must be a mono plug (tip and ground). If you have a stereo plug only, it will be necessary to tie the ring and the ground together.*

Unbalanced (1/4") Line Out

This jack provides another audio output, but it is located later in the signal chain than the Effects Send jack. This signal is post-EQ AND post-effects loop, but still before (pre) the Master (volume) control. You should use this jack when using an effects device in the effects loop and wish to achieve:

1. A line level output for use in conjunction with an additional (slave) power amp—such as SWR's Power 750.
2. An unbalanced output suitable for recording or live mixing board purposes.

Patch Point (Preamp Out and Power Amp In Jacks)

For additional patching flexibility at the very end of the audio signal chain, we have provided what some refer to as a "patch point" on your Workingman's 8004. This is comprised of:

1. A Preamp Out jack that is post-master (in other words, its signal level is affected by the Master control on the front panel)
2. A Power Amp In jack that is post-everything (it goes directly into the power amp at a preset level and cannot be adjusted specifically by anything on the front panel)

The "patch point" circuit can be utilized as an effects loop after your side-chain effects loop's signal has returned. The Preamp Out can be used as a final audio output if you're already using the Effects Send and the Unbalanced Line Out jacks for other purposes. If connected to an additional power amp, the Preamp Out can be useful in that you now have the ability to control the levels of both the power amp in your Workingman's 8004 and your additional power amp with a single control: the Master (volume) on the front panel of the Workingman's 8004.

Note: *SWR loyalists may find it interesting that this circuit was also present on two of our earliest models: the Studio 220 and the classic SM-400.*

Cooling Fan & Fan Mode Switch

The power amp in your Workingman's 8004 is cooled by two methods: 1) An (internal) extruded aluminum heatsink; 2) A fan. You have complete operational control of the fan via the Fan Mode Switch. Setting the Fan Mode Switch to the "On" position activates the internal cooling fan. Setting the switch to the "Off" position deactivates the cooling fan, regardless of the internal temperature of the unit. For this reason, it is recommended that the Fan Mode Switch be set to the "On" position for the majority of the time that the amplifier is in operation.

Be sure to leave at least a 1/2" clearance between the vent on the top of your Workingman's 8004 and anything you wish to put on top of it. This will allow for the heat generated by internal components to escape.

Note: *It is normal for the cooling fan to be audible at low levels. We recommend deactivating the fan only in situations where the noise floor is so low that normal fan noise might be noticeable or distracting, such as recording situations where a microphone is used in close proximity to the unit.*

SPEAKER OUTPUT SECTION

This section of the manual will deal with the proper connection of speaker cabinets to the power amplifier in the Workingman's 8004. Some of this ground has already been covered in the Getting Started—Connecting Your Speaker Cabinets section in the beginning of the manual. This is meant to supplement that section and provide information in greater detail, as power amplifiers, impedance and speaker cabinets are all crucial in determining how best to operate your new Workingman's 8004.

How Impedance Affects Power Ratings

People often have questions about impedance. What is it? The root of the word "impedance" is the verb "impede," which means to block or resist. That's what impedance is—resistance to power.

Power amps do not have a pre-determined impedance. They deliver power at whatever impedance the

speaker cabinet tells it to. That's why you hear the term "slave amp"—amplifiers only do what they're told. So if someone tells you that they have a "4 ohm power amp," their terminology and understanding of the concept is way off the mark.

Unlike power amps, every speaker cabinet has a pre-determined impedance rating measured in "ohms." In most cases this rating is either 4 or 8 ohms (though there may still be some old 2 ohm creakers out there). The higher the impedance of the speaker cabinet, the more resistance to power it will offer. The lower the resistance of the speaker cabinet, the less resistance to power it will offer. In other words, HIGHER IMPEDANCE MEANS LESS POWER CAN ENTER THE SPEAKER CABINET. LOWER IMPEDANCE MEANS MORE POWER CAN ENTER THE SPEAKER CABINET.

You may be thinking that you've found the solution to the universe—just use speaker cabinets with really low impedances and you can get skull-crushing power out of your amplifier, right? Wrong. There's a catch. Power amps have limits as to how low an impedance they can drive safely. This is what's known as an amplifier's "Minimum Impedance Rating." If you try and operate a power amp below its minimum impedance rating, it will give you lots and lots of power for about five minutes... and then overheat, short out and fail completely. In other words, THE LOWER THE OPERATING IMPEDANCE OF THE AMPLIFIER, THE HOTTER IT WILL GET.

Power Amplifier Minimum Impedance Ratings

Here's what this means to the power amp in the Workingman's 8004. As mentioned previously, the 8004 contains a mono power amp, which makes things fairly simple. The Minimum Impedance Rating of the Workingman's 8004 is 2.6 ohms. This means that you can safely connect:

- One 8 ohm speaker enclosure
- Two 8 ohm speaker enclosures
- Two 16 ohm speaker enclosures
- One 4 ohm speaker enclosure

The optimum operating impedance for the Workingman's 8004 is 4 ohms. This way you get a good amount of power from the amp (750 watts—we'd call that "a good amount!") without operating too closely to the minimum impedance—or, in simple terms, without running the amplifier too hot. That having been said, the Workingman's 8004 is rated to operate safely when connecting:

- One 8 ohm and one 4 ohm enclosure (2.6 ohms total)
- Three 8 ohm enclosures (2.6 ohms total)

These two hookups will provide 850 watts of power—which should be more than enough for just about any application!—but as previously mentioned, your amplifier will run hotter, and an amp that runs at or near its minimum impedance all the time may wear the life of its components faster than normal. Furthermore, damage to the power amplifier section of the Workingman's 8004 may occur if speaker enclosures with total impedances less than the minimum loads listed above are connected to the speaker output section. The owner's manual that came with your speaker cabinet should state its total impedance. On SWR speaker enclosures, the total impedance is generally indicated on the speaker's input panel.

So how do you determine the total impedance of two cabinets hooked up to your Workingman's 8004? Here's a quick key of the most common setups:

One 8 ohm enclosure + one 8 ohm enclosure = 4 ohms total impedance

One 4 ohm enclosure + one 4 ohm enclosure = 2 ohms total impedance

One 8 ohm enclosure + one 4 ohm enclosure = 2.6 ohms total impedance

Here's another formula: To figure out the total impedance of two or more cabinets of equal value hooked up in parallel, divide the impedance of one cabinet by the number of cabinets:

Impedance of one cabinet / number of cabinets = total impedance

(For an even more in-depth discussion of impedance and power rating issues, go to the SWR web site at www.swrsound.com, click on "Press," then click on "Articles," then click on "Plug and Play–Setup Tips for Amps and Speakers"—an article by SWR founder Steve Rabe that ran in the August '92 issue of *Bass Player* Magazine.)

Power Delivery Capabilities (Power Ratings)

After determining how the number of cabinets you wish to run will affect the total operating impedance, you need to take into account the power handling capabilities of your speaker cabinets as compared to what the Workingman's 8004 can deliver at that impedance. Those ratings are as follows:

850 Watts @ 2.6 ohms

750 Watts @ 4 ohms

450 Watts @ 8 ohms

So if you have two 8 ohm speaker cabinets, they will each get up to 375 watts of power, and more during transient peaks. A single 4 ohm cabinet will get 750 watts of power, and again, more during peaks. Make sure your speaker cabinet(s) can handle the power!

Also be aware that when running the amp at 2.6 ohms, you are operating at or near the maximum capacity of the power amplifier. With extreme settings on the Gain and Master controls, you may hear audible clipping of the power amp. If so, you have exceeded the maximum capacity of the power amp. POWER AMP CLIPPING CAN CAUSE DAMAGE BOTH TO ITSELF AND YOUR SPEAKER CABINETS. If this occurs, back off on the Gain and Master controls.

Remember, it's always better to have a little too much power than just barely enough. If you find yourself constantly wanting more power than the Workingman's 8004 provides, either:

a) Tell your bandmates to turn down

b) Tell the monitor engineer to turn you up

c) (best option) Take the time to investigate getting an external power amp and/or additional speaker cabinets to supplement your rig.

Question: Can you safely daisy-chain an 8 ohm speaker cabinet and a 4 ohm speaker cabinet together even though they have different impedances? Yes, but one speaker cabinet will get more power—and be louder—than the other. Since your Workingman's 8004 is a mono amplifier, it is best to use cabinets of similar impedances when using more than one. The best two-cabinet setup is to use two 8-ohm enclosures.

Note: *The frequency response of the Workingman's 8004 is far greater than usually found in musical instrument amplifiers (20 Hz to 40 kHz). This was engineered in order to give the bass player the same punch and clarity on stage as found in the studio or concert P.A. systems. Therefore, it is doubly important that you are aware of the impedance and power rating of the speakers that you intend to use, and that they are compatible with the Workingman's 8004. Speakers that have been overdriven are easy to detect and generally do not fall under a manufacturer's warranty.*

Speaker Output Jacks

Two 1/4" phone jacks and two Speakon Jacks (all wired in parallel) are provided for connection of the Workingman's 8004 to your speaker system. Whenever possible, use of the Speakon jacks is recommended. Speakon jacks and connectors offer the best possible connection and are far superior to banana or 1/4" phone jacks in that they not only lock in place (preventing accidental disconnection), but also offer a greater and more stable connection surface. This solid connection provides a more effective transfer of power to your speakers.

Only SPEAKER CABLE of 18 gauge or heavier (the heavier the cable, the lower the gauge) should be used to connect your Workingman's 8004 to your speaker system. Do not use shielded instrument cable to connect your amplifier to your speaker enclosure, as this can result in intermittent power loss, cause your amp to oscillate and damage itself and/or your speakers, and render the cable useless for any purpose.

Note: *Unlike most amplifiers on the market, the Workingman's 8004 can be used for recording purposes without speakers attached to the speaker output jacks (using only the Balanced [XLR] Output).*

The most highly recommended single SWR Speaker enclosure for use with the Workingman's 8004 is—of course—the Workingman's Tower! It's a perfectly matched rig in terms of both tone and power delivery/handling. Other single SWR Speaker enclosures recommended for use with the Workingman's 8004 include:

- Megoliath
- Goliath Senior
- Henry 8x8
- Big Bertha

Note: *All above cabinets are from SWR's Professional Line.*

Recommended SWR Workingman's Speaker combinations for use with the Workingman's 8004 include:

- (2) Workingman's 4x10Ts
- (1) Workingman's 2x10T and (1) Workingman's 4x10T
- (1) Workingman's 4x10T and (1) Workingman's 1x15T

Speaker Fuse

The speaker fuse is provided to protect your speakers in the unlikely event of a power amp failure or to protect your power amplifier from incorrect speaker impedances or hookups. Size and rating of the fuse is 3AG, 10 amp, fast-blo. Do not defeat the purpose of this feature by using a higher rated fuse as it can damage your amplifier and void your warranty.

The fuse can open as a result of a fault in the speaker cable, the speakers themselves, or the power amp being sent well into clipping. With this in mind, it is wise to carry extra fuses at all times.

Line Fuse (A/C or Mains Fuse)

This fuse is provided to protect the internal electronics against power surges, etc. It also protects the unit against itself should one of the internal components fail. If this fuse should open, replace it with the same type of fuse and rating. Do not defeat the purpose of this feature by using a higher rated fuse as it can void your warranty.

Proper size of the AC fuse for all countries is 3AG. Proper rating of the fuse is as follows:

United States: 10 amp slo-blo

Japan: 10 amp slo-blo

Europe (230-240V): 5 amp slo-blo

A/C Cord Receptacle

Accepts a standard A/C power cable (supplied with the Workingman's 8004 in the United States) used with almost all current musical, professional and household electronic devices. We recommend great care when packing up. Put the cable in your instrument or accessory case or leave it attached and looped around the side strap handle. If it does become misplaced, a replacement cable can be purchased at almost any music or computer store.

Note: *The rating for this cable is 3 conductor, 10 amperes minimum. Look for this rating on the cable. Make sure the cable is plugged in all the way in both the amp and the wall socket.*

WORKINGMAN'S 8004 T/O/P LIMITED WARRANTY

The WORKINGMAN'S 8004 *from SWR Sound Corporation is warranted to the original consumer purchaser for TWO YEARS from the date of purchase in the USA against defects in materials and workmanship and provided that it is purchased from an authorized SWR dealer.*

This warranty is VOID if the unit has been damaged due to accident, improper handling, installation or operation, shipping damage, abuse or misuse, unauthorized repair or attempted repair, or if the serial number has been defaced or removed. SWR Sound Corporation reserves the right to make such determination on the basis of factory inspection.

All liability for any incidental or consequential damages for breach of any expressed or implied warranties is disclaimed and excluded herefrom.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so that the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

SHOULD YOUR SWR AMPLIFIER REQUIRE SERVICE OR REPAIR, PLEASE USE THE FOLLOWING PROCEDURE:

Locate your original receipt showing details of purchase including date of purchase, model, and serial number.

1. Contact the SWR Service Department with a brief description of the problem and you will be issued a Return Authorization Number ("RA Number").

2. Pack your unit carefully, include a copy of your bill of sale. Indicate the Return Authorization Number on the outside of the shipping carton and ship it PREPAID to the address below. Note: You are responsible for freight and insurance charges to and from the factory.

3. SWR Sound Corporation will provide free repair (parts and labor), or replacement at our option, on units determined to be under warranty. SWR will return the repaired unit to you FREIGHT COLLECT.

For a complete list of Authorized SWR Service Centers, and the latest SWR news, interviews, and more, check out our website:

swrsound.com

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